

# **INITIAL STATEMENT OF REASONS**

**AMENDMENTS TO APPLIANCE EFFICIENCY REGULATIONS**

**CALIFORNIA CODE OF REGULATIONS, TITLE 20, SECTIONS 1601 - 1608**

**CALIFORNIA ENERGY COMMISSION**

**Docket Number 04-AAER-1**

**September 10, 2004**

## **Introduction**

In this rulemaking proceeding the California Energy Commission (“Commission”) is proposing to amend its regulations concerning the energy efficiency of appliances.

The Commission first adopted appliance regulations in 1976 and has periodically revised them since then. The current regulations include provisions on testing of appliances to determine their efficiency, reporting of data by manufacturers to the Commission, standards establishing mandatory efficiency levels, and compliance and enforcement procedures, as well as general provisions on the scope of the regulations and definitions.

In the rulemaking proceeding that is the subject of this Initial Statement of Reasons (“ISOR”), the Commission is proposing to adopt new and revised efficiency standards for nineteen types of appliances, and new testing and data-reporting requirements (but not efficiency standards) for an additional four types. Some of the amendments revise current standards, and some establish new standards for appliance types for which efficiency standards do not currently exist. (Some of appliance types included in the proposed amendments are parts of classes of appliances for which efficiency standards currently exist for some types (or sizes) but not for others; for example, while the current regulations contain standards for certain types of refrigerators and certain sizes of air conditioners, the proposed amendments would add standards for other types of refrigerators and for very large air conditioners.)

In addition to the new and revised efficiency standards, the proposed amendments include corresponding changes to provisions on the scope of the regulations, definitions, test methods, and data reporting. They also include minor corrections and clarifications throughout the regulations.

In 2002 the Commission adopted extensive revisions to its appliance regulations, including re-organizing some sections and making substantial additions to the sections on compliance and enforcement. In the current rulemaking addressed by this ISOR, the basic structure established by the 2002 amendments remains in place.

This Initial Statement of Reasons (“ISOR”) describes the technical and policy rationales for the proposed amendments, including the projected energy and economic savings resulting from the proposed amendments, and other information

required by law. Information on public hearings, submittal of comments on the proposed amendments, document availability, and other matters concerning the proposal is contained in the companion Notice of Proposed Action, which is available from Linda Franklin at LFrankli@energy.state.ca.us. Also available from Ms. Franklin is the Form 399 (Economic and Fiscal Impact Statement), which includes detailed information on cost-effectiveness.

### **Factors Applicable to All Sections**

Several of the legal requirements for the Initial Statement of Reasons call for the same general information for each section of the proposed amendments. To save space and the reader's time, we provide that general information here. Where additional information is required, it is presented under the appropriate individual section.

#### **PURPOSE, RATIONALE, AND NECESSITY OF THE PROPOSED AMENDMENTS IN GENERAL**

The California economy, and indeed the well-being of all of California's citizens, depends on an adequate, reasonably-priced, and environmentally-sound supply of energy. Recent growth in electricity demand has strained the reliability of California's electricity system and has in some circumstances contributed to a substantial rise in electricity prices. Similarly, natural gas supplies are becoming tighter.

Improvements in energy efficiency are the cheapest and most environmentally-friendly methods to help bring demand and supply into balance. Thus existing law (Public Resources Code Section 25402(c)) requires the Commission to adopt standards that prescribe minimum efficiency levels for appliances. The standards setting the minimum efficiency levels must be feasible and cost-effective. This ISOR describes the feasibility and cost-effectiveness of each of the proposed efficiency standards.

#### **REASONS FOR MANDATING SPECIFIC ACTIONS, PROCEDURES, TECHNOLOGIES, OR EQUIPMENT; CONSIDERATION OF PERFORMANCE STANDARDS**

For the most part, the proposed efficiency standards are performance standards, which do not mandate any particular action, procedure, technology, or equipment; any such technique may be used in order to achieve the standards.

The following provisions would add or revise prescriptive standards:

Section 1605.3(a)(4). This proposed new section would require walk-in refrigerators and walk-in freezers:

to have controls that automatically close the doors;

if they have transparent reach-in doors, to use triple-pane glass with either heat-reflective treated glass or gas fill, and, if they have anti-sweat heaters, to have heaters that meet certain performance characteristics;

to have insulation at specified levels; and

to use specified types of motors.

There is as yet insufficient data on the energy consumption characteristics of these appliances to formulate an energy efficiency standard; moreover, it would be difficult to devise a test method for this type of equipment, which is often built on site rather than in a factory. Therefore, energy efficiency performance standards are impractical at this time. In contrast, the proposed prescriptive standards do not require a test method and can easily be applied on site (and they are cost-effective).

Section 1605.3(e)(1)(B). This new section would require natural gas unit heaters and duct furnaces to have either power venting or an automatic flue damper.

It is not possible to specify a performance standard that would encompass the energy performance of power venting or automatic flue dampers; the existence of two options provides some of the flexibility that a performance standard would provide.

#### STUDIES, REPORTS, AND DOCUMENTS RELIED UPON

Holland, Jim, and R. Michael Martin, “Update of Appliance Efficiency Regulations – Draft Staff Report.” Energy Commission Publication #400-04-007D, July 2004.

California Energy Commission’s Electricity Analysis Office, “IOU Electricity Rate Forecast.” April 30, 2004.

California Energy Commission's Natural Gas Analysis Office, "Natural Gas Price Monthly Forecast, 2005-2035." May 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Commercial Packaged Refrigerators, Freezers, Refrigerator-Freezers, and Ice Makers," April 28, 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Open Case Refrigerators and Freezers," May 11, 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Walk-in Coolers (Refrigerators) and Freezers," May 10, 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Water Dispensers," April 28, 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Refrigerated Beverage Vending Machines," May 5, 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Very Large Air-Cooled Unitary Air Conditioners," May 3, 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Evaporative Coolers," May 11, 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Ceiling Fans," May 9, 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Whole House Fans," April 28, 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Residential Exhaust Fans," April 27, 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Unit Heaters and Duct Furnaces," May 9, 2004.

Fernstrom, Gary B., PG&E. "Analysis of Standards Options for Residential Pool Pumps, Motors, and Controls," May 12, 2004.

Fernstrom, Gary B., PG&E. “Analysis of Standards Options for Portable Electric Spas,” May 12, 2004.

Fernstrom, Gary B., PG&E. “Analysis of Standards Options for Pre-Rinse Spray Valves,” May 4, 2004.

Fernstrom, Gary B., PG&E. “Analysis of Standards Options for General Service Incandescent Lamps,” May 5, 2004.

Fernstrom, Gary B., PG&E. “Analysis of Standards Options for BR, ER, and R20 Incandescent Lamps,” April 28, 2004.

Fernstrom, Gary B., PG&E. “Recommendations for Administrative Clarifications for Design Standards for Torchieres (Sec. 1605.3(n)),” March 10, 2004.

Fernstrom, Gary B., PG&E. “Analysis of Standards Options for Metal Halide Lamps and Fixtures,” April 28, 2004.

Fernstrom, Gary B., PG&E. “Analysis of Standards Options for Under Cabinet Fluorescent Fixtures Attached to Office Furniture,” May 5, 2004.

Fernstrom, Gary B., PG&E. “Analysis of Standards Options for Commercial Hot Food Holding Cabinets,” May 6, 2004.

Fernstrom, Gary B., PG&E. “Analysis of Standards Options for Consumer Electronics Standby Losses,” May 3, 2004.

Fernstrom, Gary B., PG&E. “Analysis of Standards Options for Single-Voltage External AC to DC Power Supplies,” May 3, 2004.

SBW Consulting, Inc. for the California Urban Water Conservation Council. “Evaluation, Measurement & Verification Report for the CUWCC Pre-Rinse Spray Head Distribution Program,” May 3, 2004.

REASONABLE ALTERNATIVES, IF ANY, TO THE PROPOSED  
AMENDMENTS THAT WERE CONSIDERED, INCLUDING ALTERNATIVES  
TO LESSEN IMPACTS ON SMALL BUSINESS, AND REASONS FOR  
REJECTING THEM

The Commission has not considered alternatives in substantial detail. The alternative to setting the proposed efficiency standards would be to allow market forces to drive the efficiency of the appliances upward over time. This process would require a far longer period to reach the efficiency levels in the proposed standards (if indeed they ever would be reached), thereby depriving California's citizens and businesses of the economic and environmental benefits of increased energy efficiency. In particular, the Commission did not consider any alternatives for the specific purpose of avoiding impacts on small businesses, because there will be no adverse impacts (see next paragraph).

EVIDENCE RELIED UPON TO SUPPORT THE INITIAL DETERMINATION,  
IN THE NOTICE OF PROPOSED ACTION,  
THAT THE PROPOSED REGULATIONS WILL NOT HAVE  
A SIGNIFICANT ADVERSE ECONOMIC ADVERSE IMPACT ON BUSINESS

The improved levels of efficiency resulting from the proposed efficiency standards will increase the purchase price of appliances. However, the improved efficiency also will result in reduced energy use and thus reduced utility bills for businesses. The Commission conducted a cost effectiveness analysis that shows that over 15 years, the net savings to California businesses will be nearly \$1.6 billion. The following table summarizes the effects of the proposed efficiency standards on California businesses that will purchase appliances affected by the proposed efficiency standards.

Appliance	End-Use Category	Estimated Appliance Design Life (Years)	Estimated Increase of Purchase Price Due to the Proposed Standard	Estimated Reduction in Electrical Energy Use Due to the Proposed Standard (KWh/Unit/Yr)	Estimated Reduction in Natural Gas Use Due to the Proposed Standard (Therms/Unit/Yr)	Total Energy Cost Savings per Unit Over the Design Life of the Appliance (\$)	Reduced Total Cost Over the Design Life of the Appliance (\$)	Total Statewide Dollar Savings Over the Life of the Regulations (15 years)
Commercial Refrigerator, Solid Door	Small Commercial	9.0	\$121.00	777.0		\$910.64	\$789.64	\$19,730,620
Commercial Freezer, Solid Door	Small Commercial	9.0	\$147.00	586.0		\$686.79	\$539.79	\$9,157,227
Commercial Refrigerator, Trans. Door	Small Commercial	9.0	\$128.00	1354.0		\$1,586.89	\$1,458.89	\$21,158,507
Commercial Freezer, Trans. Door	Small Commercial	9.0	\$138.00	2647.0		\$3,102.28	\$2,964.28	\$9,100,033
Open Case Refrigerators and Freezers	Medium Commercial	10.0	\$36.40	250.0		\$260.50	\$224.10	\$6,955,350
Walk-In Refrigerator	Small Commercial	10.0	\$1,184.00	5,995.0		\$7,625.54	\$6,641.54	\$45,296,302
Walk-In Freezer	Small Commercial	10.0	\$1,172.00	11,875.0		\$15,105.38	\$13,933.38	\$46,221,300
Refrigerated Vending Machines	Small Commercial	10.0	\$56.00	308.0		\$391.78	\$335.78	\$24,094,224
Ice making head, water cooled<500 lbs	Small Commercial	8.0	\$58.00	316.0		\$337.49	\$279.49	\$11,374,148 (total for this icemaker category)
Ice making head, water cooled>=500 lbs	Small Commercial	8.0	\$104.00	803.0		\$857.60	\$753.60	
Ice making head, air cooled<450 lbs	Small Commercial	8.0	\$57.00	349.0		\$372.73	\$315.73	
Ice making head, air cooled>=450 lbs	Small Commercial	8.0	\$102.00	598.0		\$638.66	\$536.66	
Ice maker, remote cond., air cooled<1000 lbs	Small Commercial	8.0	\$76.00	552.0		\$589.54	\$513.54	
Ice maker, remote cond., air cooled>=1000 lbs	Small Commercial	8.0	\$124.00	1714.0		\$1,830.55	\$1,706.55	
Ice maker, self cont., water cooled<200 lbs	Small Commercial	8.0	\$61.00	152.0		\$162.34	\$101.34	\$3,719,228 (total for this icemaker category)
Ice maker, self cont., water cooled>=200 lbs	Small Commercial	8.0	\$72.00	156.0		\$166.61	\$94.61	
Ice maker, self cont., air cooled<175 lbs	Small Commercial	8.0	\$61.00	142.0		\$151.66	\$90.66	
Ice maker, self cont., air cooled>=175	Small Commercial	8.0	\$72.00	145.0		\$154.86	\$82.86	
Water Dispenser	Small Commercial	8.0	\$12.00	266.0		\$284.09	\$272.09	\$12,304,562
Large Packaged A/C Tier 1	Medium Commercial	15.0	\$504.00	3742.0		\$5,302.41	\$4,798.41	\$19,088,690
Large Packaged A/C Tier 2	Medium Commercial	15.0	\$924.00	6533.0		\$9,257.26	\$8,333.26	\$33,326,140
Unit Heaters/Duct Furnaces	Medium Commercial	15.0	\$550.00		190	\$1,624.69	\$1,074.69	\$17,546,652
Commercial Pre-Rinse Spray Valves, gas	Small Commercial	5.0	\$5.00		336	\$1,155.84	\$1,150.84	\$46,811,520
Commercial Pre-Rinse Spray Valves, elec.	Small Commercial	5.0	\$5.00	7629.0		\$5,500.51	\$5,495.51	\$74,256,872

Appliance	End-Use Category	Estimated Appliance Design Life (Years)	Estimated Increase of Purchase Price Due to the Proposed Standard	Estimated Reduction in Electrical Energy Use Due to the Proposed Standard (KWh/Unit/Yr)	Estimated Reduction in Natural Gas Use Due to the Proposed Standard (Therms/Unit/Yr)	Total Energy Cost Savings per Unit Over the Design Life of the Appliance (\$)	Reduced Total Cost Over the Design Life of the Appliance (\$)	Total Statewide Dollar Savings Over the Life of the Regulations (15 years)
Incandescent Reflector Lamps, Comm.	Small Commercial	0.8	\$3.15	47.8		\$5.50	\$2.35	\$907,005,000
Traffic Signals for Pedestrians	Medium Commercial	7.0	\$110.00	465.0		\$392.24	\$282.24	\$25,215,107
Metal Halide Lamp Luminaires, Tier 1	Small Commercial	13.0	\$30.00	307.0		\$476.16	\$446.16	\$136,254,157
Metal Halide Lamp Luminaires, Tier 2	Small Commercial	13.0	\$30.00	219.0		\$339.67	\$309.67	131,295,133
Under-cabinet Fluorescent Lamp Luminaires	Small Commercial	15.0	\$5.00	16.0		\$27.58	\$22.58	\$6,620,160
Commercial Hot Food Holding Cabinets	Small Commercial	15.0	\$453.00	454.0		\$782.70	\$329.70	\$2,582,897
							Total	\$1,585,019,605
Current Average Electricity Rate, \$/kWh	0.115							
Current Average Natural Gas Rate, \$/therm	0.67							

## EFFORTS TO AVOID UNNECESSARY DUPLICATION OR CONFLICT WITH THE CODE OF FEDERAL REGULATIONS

The proposed regulations neither duplicate nor conflict with any federal regulation.

There are extensive federal regulations on appliance efficiency. (See 42 U.S.C. section 6291 et seq.; 10 CFR Part 430.) The new and revised efficiency standards proposed in the Energy Commission's rulemaking are for appliances that are not covered by the federal regulations. The rulemaking also includes a few proposed minor clarifications and corrections to other parts of the Commission's regulations that concern federally-regulated appliances; none duplicate or conflict with any federal regulation.

### **Specific Purpose, Rationale, and Necessity of Each Proposed Adoption, Amendment, and Repeal**

In addition to the changes discussed below, the proposed amendments would make minor clarifications and corrections throughout the regulations.

#### **Section 1601. Scope.**

The regulations must clearly list the appliances to which they apply; otherwise, regulatees would not know whether they need to comply. The proposed amendments would add the appliances listed below to the scope of the regulations.

Commercial Refrigerators and Freezers With Doors  
Commercial Refrigerators and Freezers Without Doors  
Walk-In Refrigerators and Freezers  
Refrigerated Bottled and Canned Beverage Vending Machines  
Automatic Commercial Ice Makers  
Water Dispensers  
Large Packaged Air-Cooled Commercial Air Conditioners  
Evaporative Coolers (testing and data-reporting only)  
Ceiling Fans (testing and data-reporting only)  
Whole House Fans (testing and data-reporting only)  
Residential Exhaust Fans (testing and data-reporting only)  
Unit Heaters and Duct Furnaces  
Residential Pool Pumps  
Portable Electric Spas  
Commercial Pre-Rinse Spray Valves

State-Regulated General Service Incandescent Lamps  
State-Regulated Incandescent Reflector Lamps  
Traffic Signal Modules for Pedestrian Control  
Luminaires for Metal Halide Lamps  
Under-Cabinet Fluorescent Luminaires  
Commercial Hot Food Holding Cabinets  
External Power Supplies  
Audio and Video Equipment

#### Section 1602. Definitions and Rules of Construction.

In order to make the regulations clear, the Commission must define terms that otherwise could be susceptible to different interpretations or unfamiliar to those who have to comply with the regulations. The proposed amendments to Section 1602 contain definitions of new terms used in other sections of the proposed amendments.

#### Section 1603. Testing: All Appliances

The only amendments proposed for this section would (1) clarify deadlines for the approvals of testing laboratories; and (2) delete an obsolete provision, which refers to circumstances existing “[u]ntil January 1, 2003.”

#### Section 1604. Test Methods for Specific Appliances.

Section 1604 lists the methods with which the efficiency of each appliance is determined. It is necessary to specify a particular test method for each appliance so that the efficiency of all units is assessed under the same conditions; doing so results in fair treatment for all manufacturers and consistent, reliable information for consumers. The proposed amendments specify test methods for some appliances for which there are no current testing requirements, and they specify revised test methods for some appliances that are currently subject to testing requirements, as follows:

*Appliances with Current Testing Requirements:*

*Update to Newer Edition of Current Test Method:*

Non-commercial Refrigerators, Freezers, and Refrigerator Freezers;  
Wine Chillers (Section 1604(a)(1))

Room Air Conditioners and Room Air-Conditioning Heat Pumps  
(Section 1604(b))

Central Furnaces; Boilers, and Wall Furnaces, Floor Furnaces,  
and Room Heaters (Section 1604(e)(1))

Small Water Heaters (Section 1604(f)(1))

Fluorescent Lamp Ballasts (Section 1604(j))

General Service Fluorescent Lamps and Incandescent Reflector Lamps  
(Section 1604(k))

Dishwashers (Section 1604(o))

Clothes Washers (Section 1604(p))

Clothes Dryers (Section 1604(q))

Consumer Product Cooking Products (Section 1604(r))

Electric Motors (Section 1604(s))

*Change to Current Test Method:*

Commercial Hot Food Holding Cabinets (Section 1604(r))

*Appliances for Which Testing Requirements Are Established for the First Time:*

Automatic Commercial Ice-Makers (Section 1604(a)(2))

Water Dispensers (Section 1604(a)(4))

Ceiling Fans, Evaporative Coolers, Whole House Fans, and Residential  
Exhaust Fans (Section 1604(d))

Residential Pool Pumps and Portable Electric Spas  
(Section 1606(g)(1) & (2))

Commercial Pre-Rinse Spray Valves (Section 1606(h)(3))

Traffic Signal Modules for Pedestrian Control (Section 1604(m)(2))

Metal Halide Lamp Ballasts and Under-Cabinet Fluorescent Fixture Ballasts (Section 1604(n))

Single-Voltage External AC to DC Power Supplies, and Audio and Video Equipment (Section 1604(u))

Section 1605: Energy Performance, Energy Design, Water Performance, and Water Design Standards: In General.

There are no proposed amendments for this section.

Section 1605.1. Federal Standards for Federally-Regulated Appliances

This section lists federal standards, and cross-references state standards found in sections 1605.2 and 1605.3. The proposed amendments would add appropriate cross-references to the new standards proposed for section 1605.3. There are no proposed amendments to any of the listed federal standards, except in Table C-2, which reflects changes in federal standards required by *Natural Resources Defense Council v. Abraham* (2004) 355 F.3d 179.

Section 1605.2. California Standards for Federally-Regulated Appliances

The only amendments proposed for this section are corrections of typographical errors, and clarifications.

Section 1605.3. California Standards for Non-Federally-Regulated Appliances

It is in this section where the new and revised efficiency standards would be established. Public Resources Code Section 25402(c)(1) states that the Commission's appliance efficiency standards must be feasible and cost-effective. For each one of the proposed standards, there is at least one model of appliance that currently meets the proposed standard, which demonstrates feasibility. The following tables show that each one of the proposed standards is cost-effective. For each proposed standard, there are two tables: tables labeled "A" show the total dollar savings over the lifetime of the appliance, while tables labeled "B" show the

number of years required for the energy savings from the proposed standard to make up for the increase in purchase cost. (The tables are taken from, and have the same numbering as, the tables in the Staff Report listed above. There is no Table 8A or 8B in the series of tables below).

**Table 1A - Present Value of Energy Savings for  
Commercial Refrigerators and Freezers with Doors**

<b>Refrigeration Type</b>	<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ 0.115/kWh</b>	<b>Annual Sales (units)</b>	<b>First-Year Statewide Energy Savings (1<sup>st</sup> year) (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
Solid door refrigerator Tier 3*	9	777	89.36	13,000	5.6 million	121	789.64
Solid door freezer Tier 3*	9	586	67.39	8,000	2.1 million	147	539.79
Transparent door refrigerator Tier 3*	9	1,354	155.71	8,000	9.8 million	128	1,458.89
Transparent door freezer Tier 3*	9	2,647	304.41	1,760	3.2 million	138	2,964.28

\* Tiers 1 and 2 were adopted in a previous rulemaking

**Table 1B - Simple Payback for  
Commercial Refrigerators and Freezers with Doors**

<b>Refrigeration Type</b>	<b>Added First Cost per unit (\$)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ 0.115/kWh</b>	<b>Design Life (years)</b>	<b>Simple Payback Period (years)</b>
Solid door refrigerator Tier 3*	121	777	89.36	9	1.35
Solid door freezer Tier 3*	147	586	67.39	9	2.18
Transparent door refrigerator Tier 3*	128	1,354	155.71	9	0.82
Transparent door freezer Tier 3*	138	2,647	304.41	9	0.45

\* Tiers 1 and 2 were adopted in a previous rulemaking

**Table 2A - Present Value of Energy Savings for  
Commercial Refrigerators and Freezers without Doors**

<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Annual Sales (units)</b>	<b>First-Year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
10	250	28.75 @ \$0.115/kWh	17,800	222,500*	36.40	224.10

\*This first-year statewide energy savings assumes that 95% of the existing installed base already complies with the proposed standard.

**Table 2B - Simple Payback for  
Commercial Refrigerators and Freezers without Doors**

<b>Added First Cost per unit (\$)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
36.40	250	28.75 @ \$0.115/kWh	10	1.26

**Table 3A - Present Value of Energy Savings for Walk-In Refrigerators and Freezers**

<b>Walk-In Type</b>	<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ 0.115/kWh</b>	<b>Annual Sales (units)</b>	<b>First-Year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
Refrigerators	10	5,995	689	3,960	23.7 million	1,184	6,441.64
Freezers	10	11,875	1,366	2,040	24.2 million	1,172	13,933.00

**Table 3B - Simple Payback for Walk-In Refrigerators and Freezers**

<b>Walk-In Type</b>	<b>Added First Cost per unit (\$)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ 0.115/kWh</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
Refrigerator	1,184	5,995	689	10	1.7 year
Freezer	1,172	11,875	1,366	10	0.9 years

**Table 4A - Present Value of Energy Savings for Refrigerated Canned and Bottled Beverage Vending Machines**

<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
10	308	35.42 @ \$0.115/kWh	41,000	12.6 million	56	335.78

**Table 4B - Simple Payback for Refrigerated Canned and Bottled Beverage Vending Machines**

<b>Added First Cost per unit \$</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
56	308	35.42 @ \$0.115/kWh	10	1.6 years

**Table 5A - Present Value of Energy Savings for Commercial Ice Makers**

<b>Unit Type</b>	<b>Harvest Rate (100 lbs ice/24 hours)</b>	<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$ ) @ 0.115/kWh</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
Ice-making head, water cooled	<500	8.5	316	36.34	7,867	5.2 million	58	279.49
	>=500	8.5	803	92.35			104	753.60
Ice-making head, air cooled	<450	8.5	349	40.14			57	315.73
	>=450	8.5	598	68.77			102	536.66
Remote-condensing , air cooled	<1000	8.5	552	63.48			76	513.54
	>=1000	8.5	1,714	197.11			124	1,706.55
Self-contained, water cooled	<200	8.5	152	17.48	12,486	1.4 million	61	101.34
	>=200	8.5	156	17.94			72	94.61
Self-contained, air cooled	<175	8.5	142	16.33			61	90.66
	>=175	8.5	145	16.68			72	82.86

H= harvest rate in 100 lbs of ice per 24 hours

\* = In addition, the maximum water use (gallons per 100 lbs of ice) shall be 200-0.022H or less.

\*\* =In addition, the maximum water use (gallons per 100 lbs. ice) shall be 191-0.0315H or less.

**Table 5B - Simple Payback for Commercial Ice Makers**

<b>Unit Type</b>	<b>Added First Cost per unit (\$)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ 0.115/kWh</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
Ice-making head, water cooled <500	58	316	36.34	8.5	1.6 years
Ice-making head, water cooled >=500	104	803	92.35	8.5	1.1 year
Ice-making head, air cooled <450	57	349	40.14	8.5	1.4 years
Ice-making head, air cooled >=450	102	598	68.77	8.5	1.5 years
Remote-condensing, air cooled <1000	76	552	63.48	8.5	1.2 years
Remote-condensing, air cooled >=1000	124	1,714	197.11	8.5	0.6 years
Self-contained, water cooled <200	61	152	17.48	8.5	3.5 years
Self-contained, water cooled >=200	72	156	17.94	8.5	4.0 years
Self-contained, air cooled <175	61	142	16.33	8.5	3.7 years
Self-contained, air cooled >=175	72	145	16.68	8.5	4.3 years

**Table 6A - Present Value of Energy Savings for Water Dispensers**

<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Annual Sales (units)</b>	<b>First-Year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
8	266	30.60 @ \$0.115/kWh	23,100	6.1 million	12	272.09

**Table 6B - Simple Payback for Water Dispensers**

<b>Added First Cost per unit (\$)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
12	266	30.60 @ \$0.115/kWh	8	0.4 years

**Table 7A - Present Value of Energy Savings for Large Packaged Air Conditioners**

<b>Proposed Standard</b>	<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ 0.115/kWh</b>	<b>Annual Sales (units)</b>	<b>First-Year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
Tier 1 10.0 EER	15	3,742	430.30	3,600	13.5 million	504	4,798.41
Tier 2 10.5 EER	15	6,533	751.30	3,600	23.5 million	924	8,333.26

**Table 7B - Simple Payback for Large Packaged Air Conditioners**

<b>Added First Cost per unit</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ 0.115/kWh</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
Tier 1 \$504	3,742	430.30	15	1.2 years
Tier 2 \$924	6,533	751.30	15	1.2 years

**Table 9A - Present Value of Energy Savings for Unit Heaters and Duct Furnaces**

<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (therms)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings (therms)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
15	190	127.30 @ \$0.67/therm	10,800	2.1 million	550	1,074.69

**Table 9B - Simple Payback for Unit Heaters and Duct Furnaces**

<b>Added First Cost per unit</b>	<b>Annual Unit Energy Savings (therms)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
\$550	190	127.30 @ \$0.67/therm	15	4.32 years

**Table 10A - Present Value of Energy Savings for Residential Pool Pumps**

<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Annual Sales (units)</b>	<b>First-Year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
10	1,040	119.60 @ \$0.115/kWh	143,000	148.7 million	579	454.76

**Table 10B - Simple Payback for Residential Pool Pumps**

<b>Added First Cost per unit</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
\$579	1,040	119.60 @ \$0.115/kWh	10	4.8 years

**Table 11A - Present Value of Energy Savings for Portable Electric Spas**

<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
10	500	57.50 @ \$0.115/kWh	48,000	24 million	300	197.00

**Table 11B - Simple Payback for Portable Electric Spas**

<b>Added First Cost per unit</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
\$300	500	57.50 @ \$0.115/kWh	10	5.2 years

**Table 12A - Present Value of Energy Savings for Dishwasher Pre-Rinse Valves**

<b>Design Life (years)</b>	<b>Annual unit Energy Savings</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
5	336 therms	225 @ \$0.67/therm	13,500	4.5 million therms	5	1,150.84
5	7,629 kWh	877 @ \$0.115/kWh	4,500	34 million kWh	5	5,495.51

**Table 12B - Simple Payback for Dishwasher Pre-Rinse Valves**

<b>Added First Cost per unit</b>	<b>Annual Unit Reduction in Energy Use</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
\$5	336 therms for gas water heating	\$225 @ \$0.67/therm	5	8.1 days
\$5	7,629 kWh for electric water heating	\$877 @ \$0.115/kWh	5	2.1 days

**Table 13A - Present Value of Energy Savings for General Service Incandescent Lamps**

<b>Proposed Standard</b>	<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ \$0.115/kWh</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
Tier 1	1.1	1.07	0.12	74 million	79 million	0.06	0.06
Tier 2	1.4	6.0	0.69	74 million	441 million	0.50	0.19

**Table 13B - Simple Payback for General Service Incandescent Lamps**

<b>Added First Cost per unit</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ \$0.115/kWh</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
Tier 1 \$0.06	1.07	0.12	1.1	0.5
Tier 2 \$0.50	6	0.69	1.4	0.72 years

**Table 14A - Present Value of Energy Savings for Incandescent Reflector Lamps**

<b>End Use</b>	<b>Design Life (years)*</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ \$.115/kWh</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
Residential	3.4	11.0	1.27	10.1 million	81 million	2.36	1.57
Commercial	0.8	47.8	5.50	8.8 million	158 million	3.15	2.35

\* Based on an average lamp life of 2,864 hours

**Table 14B - Simple Payback for Incandescent Reflector Lamps**

End Use	Added First Cost per unit	Annual Unit Energy Savings (kWh)	Annual Unit Energy Cost Savings (\$) @ \$.115/kWh	Design Life (years)	Simple Payback Period
Residential	\$2.36	11.0	1.27	3.4	1.9 years
Commercial	\$3.15	47.8	5.50	0.8	0.6 year

Note: In addition to energy savings, the more efficacious lamps typically have longer lives, reducing relamping costs, particularly for commercial customers where changing bulbs usually involves labor costs. This chart only shows savings and the resulting payback period resulting from energy savings.

**Table 15A - Present Value of Energy Savings for Traffic Signals for Pedestrians**

Design Life (years)	Annual Unit Energy Savings (kWh)	Annual Unit Energy Cost Savings (\$)	Annual Sales (units)	First-year Statewide Energy Savings (kWh)	Maintenance Savings over 7-year Design Life	Incremental Cost of Improvement per unit (\$)	Reduced Total Cost over the Design Life of the Appliance (\$)
7	465	53 @ 0.115/kWh	30,000	14 million	\$30	\$110 (\$95 parts & \$15 labor)	282.24

**Table 15B - Simple Payback for Traffic Signals for Pedestrians**

Added First Cost per unit	Annual Unit Energy Savings (kWh)	Annual Unit Energy Cost Savings	Maintenance Savings over 7-year Design Life	Design Life (years)	Simple Payback Period
(\$95 parts \$15 labor)	465	\$53 @ 0.115/kWh	\$30	7	1.3

**Table 16A - Present Value of Energy Savings for Luminaires for Metal Halide Lamps**

<b>Proposed Standard</b>	<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ \$0.115/kWh</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
Tier 1 – Pulse-start MH Ballast (vertical orientation)	13	307	35.31	248,000	61 million	30	446.16
Tier 2 – Minimum Ballast System Efficiency and Pulse-Start for Other Fixtures (all orientations)	13	219	25.19	335,000	76 million	30	309.67
Tiers 1 & 2 Total	13	526	60.49	583,000	137 million	60	755.83

**Table 16B - Simple Payback for Luminaires for Metal Halide Lamps**

<b>Added First Cost per unit</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ \$0.115/kWh</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
Tier 1 \$30	307	35.31	13	0.85 years
Tier 2 \$30	219	25.19	13	1.19 years
Tier 1 + Tier 2 \$60	526	60.49	13	1 year

**Table 17A - Present Value of Energy Savings for  
Under-Cabinet Fluorescent Lamp Luminaires**

<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
15	16	1.84 @ \$0.115/kWh	240,000	760,000	5	22.58

**Table 17B - Simple Payback for  
Under-Cabinet Fluorescent Lamp Luminaires**

<b>Added First Cost per unit</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
\$5	16	1.84 @ \$0.115/kWh	15	2.7 years

**Table 18A - Present Value of Energy Savings for  
Commercial Hot Food Holding Cabinets**

<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
15	454	52.21 @ \$0.115/kWh	3,300	1.5 million	453	329.70

**Table 18B - Simple Payback for Commercial Hot Food Holding Cabinets**

<b>Added First Cost per unit</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$)</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
\$453	454	52.21 @ \$0.115/kWh	15	8.7 years

**Table 19A - Present Value of Energy Savings for External Power Supplies**

<b>Proposed Standard</b>	<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ \$0.115/kWh</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
Tier 1	7	3.76	1.03	12.7 million	45 million	0.54	2.27
Tier 2	7	4.44	1.12	12.7 million	53 million	0.90	2.42

**Table 19B - Simple Payback for External Power Supplies**

<b>Added First Cost per unit</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ \$0.115/kWh</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
Tier 1 - \$0.54	3.76	0.43	7	1.25 year
Tier 2 - \$0.90	4.44	0.52	7	1.73 year

**Table 20A - Present Value of Energy Savings for Audio and Video Consumer Electronics**

<b>Proposed Standard</b>	<b>Design Life (years)</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ 0.115/kWh</b>	<b>Annual Sales (units)</b>	<b>First-year Statewide Energy Savings (kWh)</b>	<b>Incremental Cost of Improvement per unit (\$)</b>	<b>Reduced Total Cost over the Design Life of the Appliance (\$)</b>
<u>Compact audio</u> 2 Watt max. standby	5	51	5.87	1.1 million	56.1 million	1	27.71
<u>Televisions</u> 3 Watt max. standby	7	27	3.11	2.5 million	67.5 million	3	17.17
<u>DVD players/DVD recorders</u> 3 Watt max. standby	5	8	0.92	1.5 million	12 million	1	3.50
<u>IRDs</u> <u>15 Watts + (5 x # of LNBs) max.</u>	4	31	3.57	3.1 million	96 million	3	11.45
<u>DTAs</u> 3 Watt max. standby, 4 Watt max active	4	72	8.28	15,640	1.1 million	10	23.55

**Table 20B - Simple Payback for Audio and Video Consumer Electronics**

<b>Appliance Type</b>	<b>Added First Cost per unit</b>	<b>Annual Unit Energy Savings (kWh)</b>	<b>Annual Unit Energy Cost Savings (\$) @ 0.115/kWh</b>	<b>Design Life (years)</b>	<b>Simple Payback Period</b>
Compact Audio	\$1	51	5.87	5	0.2 year
Television	\$3	27	3.11	7	1 year
DVD Player	\$1	8	0.92	5	1.1 year
IRD	\$3	31	3.57	4	0.8 year
DTA	\$10	72	8.28	4	1.2 year

Section 1606: Filing by Manufacturers; Listing of Appliances in Database.

In order to determine whether appliances comply with the applicable standards, and in order to provide valuable information to building officials, utilities operating appliance efficiency incentive programs, researchers, and the general public, it is necessary for the Commission to collect data from manufacturers. Thus the Commission's appliance regulations have required data-submittal since their inception in 1976. The proposed amendments would add reporting requirements for the new appliances added to the scope of the regulations (see discussion of Section 1601, above). The proposed amendments also would make minor corrections and clarifications to this section.

Section 1607: Marking of Appliances.

Section 1608: Compliance, Enforcement, and General Administrative Matters.

The proposed amendments would make only minor corrections and clarifications in these sections.